

SECTION 09644

WOOD ATHLETIC-FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. DIN certified maple, strip flooring on fixed, steel-channel-and-clip system and resilient pads.
 - 2. Ventilated base trim.
 - 3. Finishing of gymnasium floor.
 - 4. Installation of Owner furnished dedication plaque in floor.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-In-Place Concrete" for concrete substrate flatness and leveling tolerances, curing, finishing and vapor barrier.
 - 2. Division 9 Section " Resilient Sports-Floor Coverings" for resilient flooring for track
 - 3. Division 11 Section "Gymnasium Equipment" for floor sleeves installed with wood athletic flooring.

1.03 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: For each type of product indicated showing construction details, material descriptions, dimensions of individual components and profiles, and finishes for wood athletic-flooring. Include installation instructions, handling, storage, moisture protection, anchorage, finishing, protection, and maintenance.
- C. Shop Drawings: Show installation details including location and layout of each type of wood, method of attachment, moisture barrier, substrate conditions, method of construction, relationships of surrounding construction, and other information and components not fully dimensioned or detailed in manufacturer's product data. Include the following:
 - 1. Expansion and ventilation provisions and trim details.
 - 2. Type and spacing of pads and fasteners, including pad spacing or rigid blocking under retractable bleacher system.
 - 3. Layout, colors, widths, and dimensions of game lines and markers.
 - 4. Locations of athletic equipment floor anchors installed in wood flooring.
- D. Samples: Manufacturer's color charts showing colors and glosses available for the following:
 - 1. Floor finish.
 - 2. Game-line and marker paint.
- E. Maintenance Data: For wood sports -floor assemblies and finish systems to include in maintenance manuals.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced Installer, certified by the flooring manufacturer, who has completed wood, athletic flooring similar in material, design, and extent to that indicated for this Project and whose work has resulted in wood, athletic-flooring installations with a record of successful in-service performance. The certified dealer's crew shall install floor system and shall not be out sourced to a third party installer.
 - 1. Installer's Responsibilities: Shall include undivided responsibility for installation of flooring assembly, including the following:
 - a. Moisture barrier.
 - b. Anchorage system.
 - c. Sleepers (or channels).
 - d. Subfloor.
 - e. Wood finish flooring.
 - f. Trim, base, and expansion provisions.
 - g. Game lines and markers.
 - h. Finish.
 - i. Accessories.
- B. Maple Flooring: Comply with MFMA grading rules for grade and cut.
 - 1. Certification: Provide flooring that carries MFMA Certification Mark on each piece.
- C. Flooring system shall have been independently tested and certified to meet or exceed Athletic Performance according to the International Standard DIN 18032, Part 2, 1991.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood-flooring materials in unopened cartons or bundles each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Protect wood flooring from exposure to moisture in shipment, storage, and handling. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and cured to a condition of equilibrium.
- C. Moisture Content: At time of delivery to Project, maintain 6 to 9 percent average moisture content.
- D. Store wood-flooring materials in a dry, warm, well-ventilated, weathertight location.

1.06 PROJECT CONDITIONS

- A. Attend pre-concrete slab conference to review requirements for slabs receiving wood athletic-flooring assembly.
- B. Conditioning: Do not proceed with installation of athletic-flooring assembly until after spaces to receive flooring are enclosed, dry and maintained at approximately same humidity condition as planned for building occupancy. Place wood flooring materials in spaces to receive flooring not less than 7 days prior to start of installation. Maintain an ambient temperature between **55 and 80 deg F (13 and 27 deg C)** and a relative humidity range of 35 to 50 percent in spaces to receive wood flooring for at least seven days before installation, during installation, and for at least seven days after installation. Provide dehumidifiers to maintain this range. After post installation period, maintain relative humidity conditions and ambient temperature planned for building occupants.
 - 1. Open sealed packages to allow wood flooring to acclimatize.
 - 2. Do not install flooring until it adjusts to the relative humidity of and is at the same temperature as the space where it is to be installed.
 - 3. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by flooring and finish manufacturer, but not less than 10 days.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Product: Bio-Channel Classic; Robbins Sports Surfaces.

2.02 MAPLE FLOORING

- A. Strip Flooring: Northern hard maple (*Acer saccharum*), kiln dried before milling. Air dried flooring will not be acceptable
 1. Grade: Second & Better, unless otherwise indicated.
 2. Cut: Flat grain.
 3. Lengths: Nominal **15 to 96 inches** complying with MFMA grading rules, unless otherwise required for patterns indicated.
 4. Matching: Tongue and groove, and end matched.
 5. Backs: Channeled (kerfed) for stress relief, unless specifically recommended by manufacturer to be plain or flat backed for application indicated, and meeting DIN requirements.
 6. Thickness: **25/32 inch**.
 7. Face Width: **2-1/4 inches**.
- B. Preservative Treatment: Clear, penetrating, pliable, water-repellent wood preservative that protects against mold, mildew, staining, and decay fungi; complying with MFMA's written recommendations and applied by immersion.

2.03 WOOD SUBFLOOR SYSTEM

- A. Sleeper Anchors: Anchors recommended by flooring manufacturer, but not less than steel drive pins recommended by anchor manufacturer to achieve minimum **900-lbf** pullout strength.
- B. Plywood Subflooring: APA rated, C-D Plugged, fir or southern pine, exterior glue, **23/32 inch** thick, unless otherwise indicated.
- C. Resilient Pads: Manufacturer's standard material, sized for optimum floor resiliency at spacing specified by manufacturer for uses indicated.

2.04 FIXED, STEEL-CHANNEL-AND-CLIP SUBFLOOR SYSTEM

- A. Steel Channel Sleepers: Manufacturer's nominal **0.064-inch- (1.6-mm-)** thick (16 gage), hot-dip galvanized steel channel sleeper for use with gym floor system to retain laminated wood sleepers.
- B. Channel Anchors: Modified steel drive pins recommended by anchor manufacturer to achieve minimum **900-lbf** pullout strength.
- C. Clips: Hot-dip galvanized steel in thickness recommended by manufacturer for flooring indicated, but not less than nominal **0.040 inch** thick.

2.05 FINISHING MATERIALS

- A. Floor-Finish System: MFMA-listed system of compatible components recommended by flooring and finish manufacturers for application indicated.
 1. Type: Group 3, Gymnasium Type (Surface) Finishes; urethane-oil type, meeting 350 VOC regulations.
 2. Floor Sealer: Pliable, penetrating type.
 3. Finish Coats: Formulated for gloss finish and multicoat application.
 4. Product: Trophy Gym Finish System; Hillyard, Inc.; no substitutions.

- B. Game-Line and Marker Paint: High-gloss enamel compatible with finish and recommended by finish and paint manufacturers for this purpose.
 - 1. Colors: Shall be selected by Architect from manufacturer's full range of standard and custom mix colors for the following:
 - a. Game-lines for main basketball courts, cross basketball courts, and volleyball courts.
 - b. Main court border, 2'-0" wide.
 - c. School logo with school name at center court.

2.06 ACCESSORY MATERIALS

- A. Vapor Retarder: ASTM D 4397, polyethylene sheet not less than 6 mils thick.
- B. Tape for Vapor Retarder: Pressure sensitive tape of type recommended by vapor retarder manufacturer for sealing joints.
- C. Fasteners: Type and size recommended by manufacturer, but not less than those recommended by MFMA for application indicated.
- D. Expansion Base Trim: Molded, vented, rubber or vinyl cove base; 4 by 3 by 48 inches; with premolded outside corners.
 - 1. Color: Black.
- E. Metal Transition Strip (Door Openings): 1/4-inch high by 5 inch wide extruded aluminum, serrated non-slip surface.
 - 1. Product: National Guard Products; No. 513.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of wood-flooring assembly.
 - 1. If unacceptable conditions are encountered, prepare written report, endorsed by Installer, listing conditions detrimental to performance of Work.
- B. Concrete Slabs: Verify that concrete slabs comply with requirements specified in Division 3 Section "Cast-in-Place Concrete."
 - 1. Check flatness by transit or laser.
 - 2. Grind high spots and fill low spots as specified in Division 3 Section "Cast-In-Place Concrete" until substrate is acceptable to the athletic-flooring assembly Installer.
 - 3. Verify that slabs are dry according to test methods recommended in writing by flooring manufacturer.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove coatings including curing compounds and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone; use mechanical methods recommended by manufacturer. Do not use solvents.
- B. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION, GENERAL

- A. General: Comply with flooring-assembly manufacturer's written instructions, but not less than recommendations of MFMA and the Wood and Synthetic Flooring Institute, applicable to flooring type indicated.
- B. Pattern: Lay flooring parallel with the long dimension of the space to be floored, unless otherwise indicated.
- C. Expansion Spaces: Provide as indicated, but not less than that required by manufacturer's written instructions and MFMA's written recommendations at walls and other obstructions, and at interruptions and terminations of flooring.
 - 1. Cover expansion spaces with base molding, trim, saddles, and thresholds as indicated.
- D. Vapor Retarder: Install with joints lapped a minimum of **6 inches (150 mm)** and sealed.
- E. Installation Tolerances: **1/8 inch in 10 feet (3 mm in 3 m)** variance from level.

3.04 FIXED, STEEL-CHANNEL-AND-CLIP SUBFLOOR SYSTEM

- A. Anchor factory-assembled, steel-encased padded sleeper system using fasteners and clips as recommended by manufacturer. Pads shall be spaced to meet DIN certification. Decrease pad spacing as required by floor system manufacturer to properly support retractable bleacher system.
- B. Install layer of plywood subflooring to sleeper system, with end joints staggered. Fasten to sleepers in accordance with manufacturer's requirements.
- C. Install wood, strip flooring across steel channels, and attached to plywood, inserting a steel clip at each intersection of a flooring strip with a channel. Flooring shall be fastened every 10 to 12 inches o.c. with all end joints properly driven tight. Flooring shall be uniform and unvarying in tightness, and consistent in appearance.
- D. Install Owner furnished dedication plaque flush with finished surface of wood flooring prior to finishing of floor. Protect surface of plaque during floor finishing operations.

3.05 SANDING AND FINISHING

- A. Follow applicable recommendations in MFMA's "Industry Recommendations for Sanding, Sealing, Court Lining, Finishing, and Resurfacing of Maple Gym Floors."
- B. Allow installed flooring to acclimate to ambient conditions for at least 10 days before sanding.
- C. Machine sand with coarse, medium, and fine grades of sandpaper followed by disc sanding with 000 sandpaper to achieve a level, smooth, uniform surface without ridges, cups, or swirl marks. Clean with power vacuum, tack, and check to confirm that entire surface of each piece has been sanded, and that floor is level and smooth with a uniform surface free of swirl marks, ridges or cups. Proceed immediately with finish process.
- D. Floor Finish: Apply one coat of sealer and three finish coats of finish system according to manufacturer's written instructions including drying times between coats.
 - 1. Apply one coat of penetrating sealer.
 - 2. Screen, vacuum and tack sealer prior to first coat of floor finish.
 - 3. Apply first coat of finish following manufacturer's recommendations for application and drying time between coats.
 - a. Use care when screening between coats to prevent the appearance of swirl marks in finished floor. Allow coatings to properly cure and harden between screenings.

4. Lines and Markers: Screen, vacuum and tack first coat of finish. Prior to applying final two coats of finish, lay out lines, fields, and other markings as indicated for colored enamel application. Mask flooring to provide sharp edges. Where game lines cross, break minor game line at intersection; do not overlap lines.
 - a. Gymnasium Court Schedule:
 - 1) One main basketball court, 2 foot wide out of bounds border around perimeter of main court, center jump circle, three point lines and foul lines. Paint foul lanes opaque.
 - 2) Two cross-court basketball courts with three point lines and foul shot lanes, lines only.
 - 3) One volleyball court.
 - 4) Lettering at two locations; school name in end borders of main court.
 - 5) School logo inside center jump circle.
 5. Apply second coat of finish. Screen, vacuum and tack second coat of finish.
 6. Apply third coat of finish.
 7. Finish floor shall be free of swirl marks, lumps, bubbles, and other imperfections and irregularities.

- E. Install expansion base trim and other cover trim indicated for expansion spaces at edges and interruptions of flooring.

3.06 PROTECTION

- A. Prohibit traffic on finished floor for time period recommended by manufacturer, but not less than 10 days.
- B. Protect wood flooring during remainder of construction period to allow finish to cure and to ensure that flooring and finish are without damage or deterioration at time of Substantial Completion.
 1. Do not cover sports floors after finishing until finish reaches full cure, and not before seven days after applying last finish coat.
 2. Do not move heavy and sharp objects directly over sports floors. Protect fully cured floor finishes and surfaces with plywood or hardboard panels to prevent damage from storing or moving objects over sports floors.

END OF SECTION